(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

## CORRECTED VERSION

(54) Title: ESTIMATION OF THE ROAD CONDITION UNDER A VEHICLE
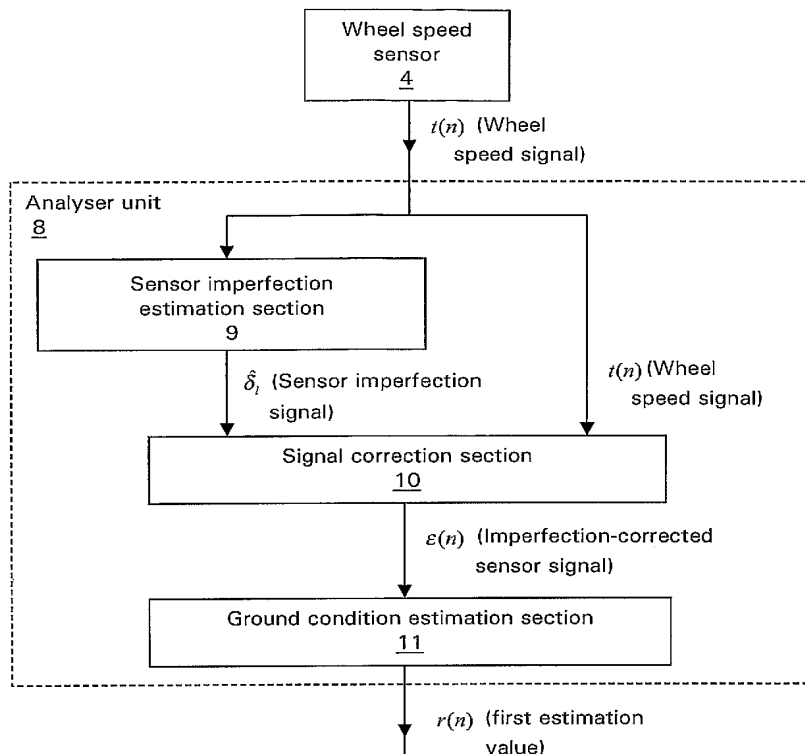
(57) Abstract: A system for estimating the ground condition under a driving vehicle, comprising: a wheel speed sensor (4) for sensing a wheel speed signal ($t(n)$, $\omega(n)$) which is indicative of the wheelpeed of a vehicle's wheel driving over the ground (2,3) and a first analyser unit (8) coupled to said wheel speed sensor (4). The first analyser unit comprises a sensor imperfection estimation section (9) which is designed to estimate a sensor imperfection signal, formula (I), from the wheel speed signal ($t(n)$) which is indicative of the sensor imperfection of the wheel speed sensor (4); a signal correction section (10) which is designed to determine an imperfection-corrected sensor signal ($\varepsilon(n)$) from the wheel speed signal ($t(n)$) and the sensor imperfection signal, formula (I); and a ground condition estimation section (11) which is designed to estimate a first estimation value ($r(n)$, $\alpha(n)$) indicative of the ground condition from the imperfection-corrected sensor signal ($\varepsilon(n)$).

$$\left( \hat{\delta}_i \right) \quad (I)$$

**(84) Designated States** *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Published:**

— *with international search report*

**(48) Date of publication of this corrected version:**

22 December 2005

**(15) Information about Correction:**

see PCT Gazette No. 51/2005 of 22 December 2005, Section II

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*